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EDITORIAL

Rip Currents and Beach Safety Education

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Rip currents are the most serious hazard that threatens bather safety on most of the world's surf beaches. Due to unreliable and inconsistent data collection methods, the number of rip drownings in the U.S. and worldwide is not known. However in the U.S., it is estimated that between 100 and 150, mostly inexperienced bathers drown annually in rip currents. Statistics from the United States Lifesaving Association (USLA) and the Florida Beach Patrol Chiefs reports show that approximately 80 percent of all lifeguard rescues and assists are the result of rip currents. Put into perspective, rip currents are responsible for more deaths than floods, hurricanes and tornadoes (Figure 1).

Despite efforts from various organizations to educate the public about rip currents, there is little empirical evidence that these efforts are effective and the number of rip drownings is declining. We believe that one of the reasons for this situation is related to the disconnect between rip current research and public education.

Beach safety programs are currently being promoted on many of the world's beaches through signage, which require bathers to look for rip currents before entering the water. They recommend looking for a discoloration in the water that takes the form of a "neck" near the shore and terminating in a mushroom shaped "head" further offshore (Figure 2). "Excited" water and flotsam swiftly moving away from the beach are often cited as other ways of visually determining if rip currents are present.

Over the past three decades we have observed hundreds of rips and recently filmed rip currents using tracer dye. In reality, rip currents seldom conform to the classic descriptions being promoted in beach safety programs and on warning signs (Figures 3. 4 and 5). Consequently, the attributes being used in

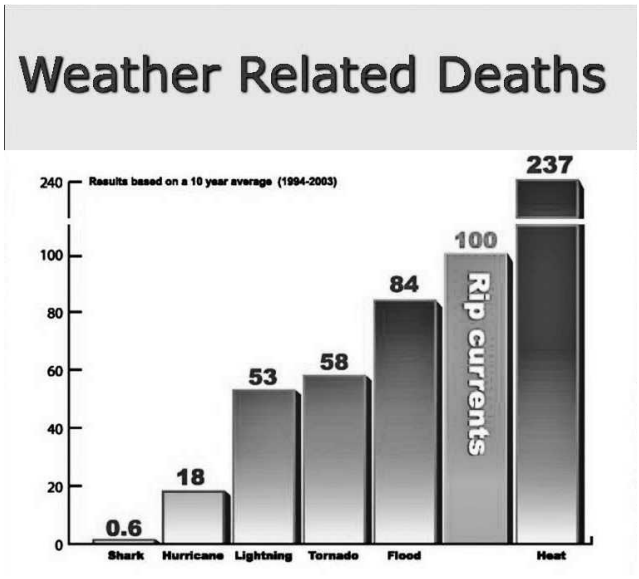

Figure 1. NWS graphic showing the loss of life from various natural hazards (see http://www.ripcurrents.noaa.gov).

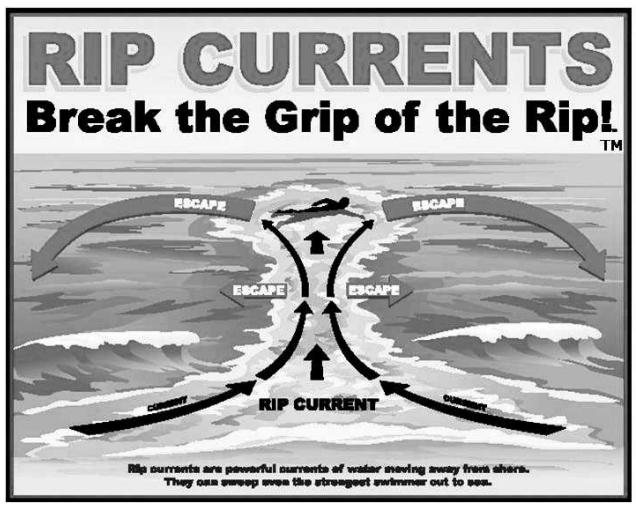

Figure 2. Standard rip current diagram (courtesy of Michigan Sea Grant and NOAA). This signage directs the public to look for this nicely formed rip pattern, which is rarely seen in nature. This raises the question–Do these diagrams actually confuse people who think that a rip is not present if they do not see this pattern at surf beaches?

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Figure 3. A relatively weak rip current at Fire Island, New York, may look like an unusual breaking wave to the causal observer (photo by Dr. Stephen P. Leatherman).

beach safety and warning programs are not reliable indicators for identifying rip currents.

We feel that it is necessary to re-evaluate how bathers are being warned and educated about these dangerous currents.

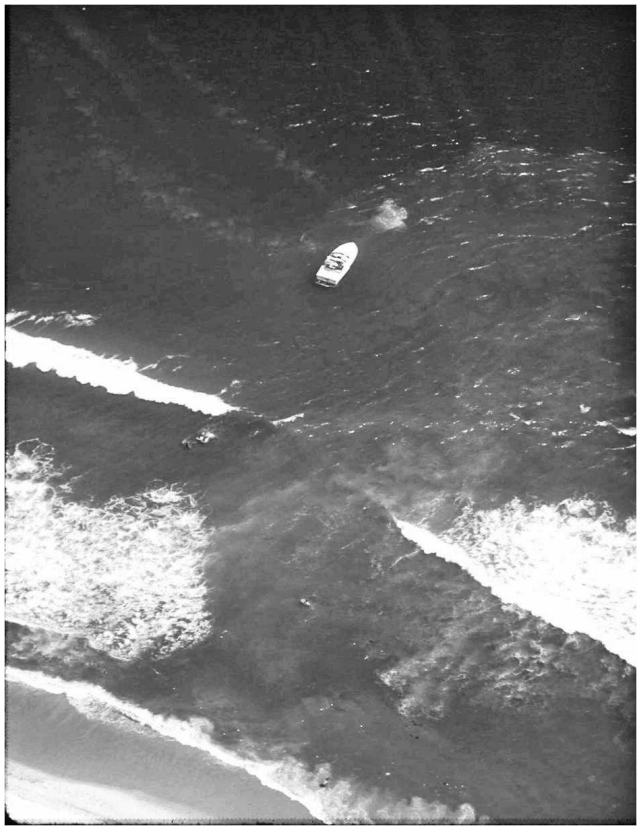

Figure 4. Rip currents sometimes just appear as a zone of relatively quieter water with no or reduced breaker action (photo by Huntington Beach Lifeguards).

Figure 5. Massive rip currents occur at Ocean Beach, San Francisco, California, where the beach is always posted for no swimming, yet many drownings have been recorded. The rip current is nearly impossible to detect by beachgoers at ground level, but is apparent from this aerial view (photo by Dr. Stephen P. Leatherman).

More effective warning methods must be developed as an outcome of this re-evaluation process. In the meantime, even if the warnings being used are not as effective as we hope them to be, we must continue to warn bathers about rip currents, especially those not experienced in bathing and swimming on surf beaches. Something is obviously better than nothing, especially when human life is at stake.

There is the additional problem regarding the recommendation given to bathers who are caught in a rip current. Bathers are instructed to ride the current offshore until it weakens or swim parallel to shore in either direction before swimming back to shore. This second recommendation is flawed because it fails to consider the likelihood that a longshore current often occurs simultaneously with the rip (Figure 6). Consequently, swim-

Figure 6. A rip current at Panama City Beach as marked by tracer dye is sinuous in shape because of a strong longshore current (photo by Dr. Choule Sonu). If someone tried to escape the rip by swimming to the right, they would be pulled back into rip current.

Figure 7. A large rip current is whirling at its terminus with a rescue boat (photo by Huntington Beach Lifeguards).

ming against the longshore current can sweep the bather back into the rip. The bather will not be making any progress toward shore, causing exhaustion and panic—these two factors often lead to drowning.

Despite our concerns about signage and related education programs, there is one element found in the message content with which we strongly agree—bathers should always be encouraged to swim near a lifeguard. The efficacy of professional lifeguard coverage has been well documented by the USLA, CDC and the Florida Beach Patrol Chiefs Association.

In summary, expecting a bather to be able to identify rip currents using current signage and information is problematic, overly optimistic, and even unrealistic. When professional lifeguards cannot always accurately identify the presence of a rip current, how can we expect members of the public to do the same?

The authors of this editorial are the organizers of an international Rip Current Symposium that is being hosted by the Laboratory for Coastal Research at Florida International University and the Florida Sea Grant Program in February 2010 (see www.ripcurrents.fiu.edu). The goals of the symposium are to identify advancements in rip current research that will lead to a better understanding about the dynamics, mechanisms and predictability of rip currents as well as make improvements in the public understanding of rips that will reduce the tragic losses of life.